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QUARTERLY JOURNAL  
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STATISTICAL SOCIETY OF LONDON.

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*Report of a Committee of the Statistical Society of London, appointed to collect and enquire into Vital Statistics, upon the Sickness and Mortality among the European and Native Troops serving in the Madras Presidency, from the year 1793 to 1838.*

THE official Reports which have been recently laid before Parliament, exhibiting the result of extensive enquiries into the Sickness and Mortality among the British Troops serving in different parts of the world, have attracted an attention corresponding to the interest of the subject, and to the ability with which they are drawn up. These enquiries, however, have not yet been extended to the East Indies, and it is probable that the investigation in that part of the globe will be confined to the European troops in Her Majesty's service. Your Committee have had the good fortune to obtain a series of returns, relating both to the European and native troops serving in the Madras Presidency, for a long series of years, similar to those upon which the official reports are founded. For these they are indebted to the kindness of James Annesley, Esq., late President of the Madras Medical Board, who, in 1825, published some valuable reports upon the health and mortality of the troops in that Presidency, and who has, upon the present occasion, contributed important assistance by superintending the preparation of the abstracts contained in this report, and by furnishing the materials for the historical and local observations which accompany it.\*

\* The following extract from a note, addressed by Mr. Annesley to the Secretary of the Statistical Society of London, will explain the circumstances under which the returns have been prepared, and have come into the possession of the Society.

"Many years' extensive experience in India brought to my observation the great prevalence of certain diseases in particular districts, and led me to the collection of materials for the formation of the returns upon which the following statements have been formed. In 1822, by the kindness of the late Lieutenant-General Sir Alexander Campbell, K.C.B., then Commander-in-Chief of the Madras army, I was favoured with a copy of a set of tables of medical returns, which had been compiled by the Madras Medical Board, from the public records contained in their office. These embraced a period of seven years, from 1815 to 1821, and from them I framed the tables which I published in October 1825, under the head of 'Sketches of the most prevalent Diseases in the different Stations and Divisions of the Madras Army,' a copy of which I have had the pleasure of depositing in the Library of the Statistical Society.

"The interest which I have always taken in this subject, from a conviction of its great importance to medical science, as well as a deep regret that it should have been so much neglected, induced me to pursue the enquiry, and, having been appointed to the Medical Board, shortly after my return to India in 1829, I was enabled to examine the records, and to collect from them information which

Your Committee are thus in some measure enabled to anticipate the official reports which they understand are in course of preparation ; and, as their data extend over a much wider period than any embraced in the reports which have hitherto appeared, they have reason to believe that a considerable part of the information now laid before the Society will not be superseded by any future official returns.

Your Committee consider it desirable to state that they have had the advantage of the co-operation of Major Tulloch, the author of the official reports, in their labours, by which means they have been able to draw up their tables in the same form adopted in those reports, and to guard against the risk of making comparisons based upon dissimilar data.

The returns upon which this report has been founded include the whole of the European troops serving under the Madras Presidency during a period of 46 years, from 1793 to 1838, and the whole of the native troops during 17 years, from 1822 to 1838. The total force in the latter year, exclusive of the troops serving on the Tenasserim coast, at Moulmein, Singapore, Malacca, and Penang, amounted to 10,000 Europeans, and 58,320 natives ; but it had been considerably greater at various times during the period under review.

These returns exhibit the mean strength of both classes of troops, with the number of admissions into hospital, and of deaths in each year, as well as the principal diseases by which the troops have been affected. They relate to the non-commissioned officers and privates only ; the officers are not included.

As the European troops consist of Her Majesty's regiments, or of troops recruited in England for the service of the East India Company, it is unnecessary to give any description of their character, which resembles that of other portions of the same force serving elsewhere. It may, however, occur, that habits of intemperance, which are prevalent among this class of the soldiery, united to exposure to a tropical climate, may occasion a predisposition to disease greater than that which exists among troops in other circumstances. The Sepoys are in general healthy active young men, very little addicted to intemperance, and capable of undergoing great fatigue as long as they retain their health. But privation of the necessary comforts of life, of proper clothing, food, and accommodation, quickly leads to exhaustion and consequent sickness.

As the medical returns were not perfect during the early years of this period, the number of sick and of deaths from 1793 to 1814 have been taken from regimental returns in the office of the Adjutant-General of the Army. These are perfectly correct as far as regards the mortality, but the records only shew the number of sick remaining in

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could only be procured in the office of that Board ; and I continued these enquiries during the remainder of my residence in India, from 1829 to 1838.

“ On my return to England, in May 1838, I contemplated the publication of these reports in a second edition of my ‘ *Researches into the Cause, Nature, and Treatment of the most prevalent Diseases of India,*’ now preparing for the press in a more portable shape, and directed entirely to practical objects ; but having had an opportunity of shewing them to Mr. Porter and Mr. Rawson, I have been induced, at the suggestion of those gentlemen, as the best way of making them useful, to offer them to the Statistical Society as documents that may be depended on as official and authentic.”

hospital on the last day of each month. This number, however, may be supposed in general to approach the average of the month, and to indicate the number of mean sick in each month. In the same manner the average of the aggregate of the twelve months will indicate the number of mean sick, or the average of men in hospital at any one time during the year. The returns from 1815 to 1821, in which the number of the sick is omitted, are taken from tables prepared by the Madras Medical Board, and published in the first of Mr. Annesley's works, referred to in the preceding note. Those from 1822 to 1826 have been taken from abstract tables in the office of the same Board, and the information which they contain is generally correct; but the tables from 1827 to 1838 have been prepared with every possible care and attention.

The returns of native troops, which include the whole force serving under the same Presidency from 1822 to 1838, are derived from the same sources as those relating to the European troops.

As the localities and climate of Moulmein, Penang, Malacca, and Singapore, which, although under the Madras government, are entirely separated from the rest of the Presidency, differ very materially from those of Madras, it has been thought proper to separate the returns from those places, extending over a period of 10 years, 1829 to 1838, from those of the Madras Presidency, and to make them the subject of a separate enquiry.

In the present Report your Committee will confine themselves to the general results for the main portion of the Presidency; exhibiting, first, the number and proportion of admissions and deaths among the European and native troops in the Peninsula of India; and, secondly, the diseases by which the sickness and mortality among each class of troops have been occasioned. On a future occasion they propose to examine the several stations separately, and to endeavour to ascertain what effect differences of locality and climate have had upon the troops.

The extent of territory possessed by the East India Company in Madras, previously to 1793, was about 64,650 square miles, of which 24,000 had been acquired in 1792, by the conquest of Malabar, and of other districts taken from Tippoo, Sultan of Mysore. The territory since acquired in the same Presidency is about 185,000 square miles in extent, exclusive of 78,000 square miles in Assam, Arracan, and the Tenasserim coast, &c., which are separated from the rest of the Presidency.\*

It is obvious that no minute account of the climate and local peculiarities of so vast an extent of country can be given until the several stations are separately examined; and the unsettled state of the troops during a large portion of the period under review would render such an account of little use except for a few years at the close of the term. Some cursory observations, however, may be useful, for the purpose of giving a general view of the Presidency, compared with other countries and with the remaining part of India.

The winds and rain in the Indian Peninsula are periodical, and are called the north-east and south-west monsoon. The Carnatic, on the eastern coast, is chiefly exposed to the influence of the north-east monsoon; while the south-west monsoon extends over the whole Peninsula, with the exception of the Coromandel coast, though there are certain

\* These figures have been taken from Sir J. Malcolm's *Life of Clive*.

districts and stations on that coast and in the Carnatic which partake, in some degree, of the south-west monsoon.

The north-east monsoon, commencing about the middle of October,\* brings in the periodical rains, which continue to the end of November or the middle of December; and, after the rains cease, the north-east wind continues until the end of February. This is the cold season, and the climate during this period, in the Carnatic, is cool and pleasant. During March and April the southerly, or, as it is called, the 'long-shore winds prevail, which are hot and relaxing, loaded with clouds of sand and dust, and causing biliary derangement and slight febrile attacks. This may be considered the most disagreeable part of the year; but these winds are attended with many advantages, by drying up and dissipating noxious vapours which may have originated during the rainy and cold season. In May the southerly and westerly winds, usually called the land-winds, commence. They are very hot, and continue during the months of May, June, and July, which constitute the hot season. August and September are generally close and sultry.

The south-west monsoon commences in May, and brings the periodical rains over the greatest part of the Peninsula, with the exception of the Carnatic below the Ghauts. Here these winds are exceedingly hot, and occasion, as already stated, the hot season, which is generally the most healthy. Refreshing showers occasionally fall in the months of July and August; but about the end of August and the beginning of September, when the south-west monsoon ceases, the climate becomes close and sultry, and the winds variable all over the country, until October, when the north-east monsoon again commences.

The annual fall of rain in this Presidency varies from 30 to 80 inches, but the usual quantity is from 50 to 60 inches.

The general character of the climate of the Carnatic is dry and hot: the range of the thermometer is usually from 70° or 75° to 84° or 88°; but it is sometimes considerably higher. In May and June it rises as high as 98° to 105°. The variation of the barometer during the year is inconsiderable; never under 29 inches (except in stormy weather, when it sometimes falls a degree lower), and seldom above 30 inches.

The Madras Presidency forms seven military divisions, with three stations beyond the frontier, and one beyond seas. The northern division extends along the sea-coast from Ganjam, near Berhampore, at the north-eastern extremity of the Presidency, and in the 19th degree of north latitude, southward to the river Khistnah. It is bounded on the west by the range of mountains running parallel to the coast. The centre division lies between the river Khistnah and the river Penaur at Cuddalore, below Pondichery, between the 11th and 12th degrees of north latitude. The southern division extends from that line to Cape Comorin. Both these divisions have the sea for their eastern boundary, and the Western range of mountains for the other. The Travancore division extends along the western coast, from Cape Comorin northwards, to the river Ponany, just below the 11th degree of north latitude, where the Malabar and Canara division

\* For many years past the monsoons have been particularly irregular and uncertain.

commences, and runs north between the Ghauts and the sea as far as Goa, in the 15th degree of north latitude. The divisions of Mysore and the Ceded Districts consist of the high table land between the centre division of the eastern coast and the Malabar and Canara division on the western shore. The Ceded Districts extend as far north as the 16th degree of north latitude; Hyderabad is one degree farther to the north, above the Ceded Districts; and Nagpore four degrees north of Hyderabad, in the same longitude. The Southern Mahratta country is upon the high table land north-west of the Ceded Districts. With reference to the climate of these several districts, the centre, presidency, and southern divisions are all influenced by the rains of the north-eastern monsoon, although the more southerly stations and those near the mountains partake, in some degree, of the south-west monsoon. The heat is considerably greater and more oppressive in the centre than in the other two divisions. The northern division, which extends from the Khistnah river northwards to Ganjam, experiences the rains of the north-east monsoon, as well as a portion of the south-western. The temperature is somewhat lower than in the Carnatic, and the climate, during part of the year, is very pleasant. Most of the stations, however, in this division are situated in the vicinity of mountains and thick jungle, and sometimes near marshy ground, where fever occasionally prevails to a great extent, and where it is extremely formidable. Mysore and the Ceded Districts partake of both monsoons. In both of these divisions the temperature is very variable. In the former, heavy dews and a damp atmosphere prevail more or less throughout the year, but more particularly during the first four months; and the difference of temperature between the day and night is excessively great. Some of the stations in this division, for instance, Seringapatam, Serah, and Chittledroog, proved so fatal to Europeans that they have for some years past been abandoned as military posts. In the Ceded Districts the thermometer ranges during January and February from 60° to 95°; in March, from 68° to 106°; in April, from 78° to 110°; with cloudy and oppressive weather until November, when it falls again, and ranges from 66° to 80°. Malabar and Canara have the south-west monsoon, as well as the Hyderabad and Nagpore States. The Hyderabad division is subject to great variations of temperature, and the mortality among Europeans stationed in it is high.

The soil of the Carnatic near the sea is composed of sand and loam, sparingly intermixed with the remains of marine and testaceous animals. The inland parts of the province contain hills of sienite, mixed with a proportion of felspar, the whole soil appearing to consist of the debris of decomposed sienitic mountains. According to local circumstances it is either a loam mixed with sand and gravel, and strongly impregnated with iron, or, in low and wet places, a stiff red loam mixed with vegetable earth and fine sand. On eminences it is generally sand and gravel. It is also in some places impregnated with salt, and in dry weather presents a saline efflorescence on the surface. The country is usually divided into high and low grounds; on the former various kinds of grain are cultivated, and on the latter rice. In all parts of the country distant from rivers, tanks of large dimensions are very common, which are kept in order by Government for the purpose of irrigation.

Your Committee will now proceed to examine the several returns consecutively. The first relates to the European troops in the Madras Presidency.

### 1. *European Troops.*

With the view of comparing different periods of service, the returns of European troops, which extend over a considerable range of years, amounting to nearly half a century, are divided into several terms, corresponding with the most important changes in the operations of the army, and of nearly equal duration, viz.—

From 1793 to 1800		From 1822 to 1830
„ 1801 „ 1809		„ 1831 „ 1838
„ 1810 „ 1821		

Previously to the conquest of Mysore, in 1799, the Madras territory was confined to a line of coast, extending in length from Ganjam to Cape Comorin, and, in breadth, from the Western range of mountains to the sea. That part between the Khistnah river and Ganjam is called the Northern Circars. From the Khistnah river southwards to Cape Comorin is called the Carnatic below the Ghauts, which now forms the centre and southern divisions of the army.—As it appears that none of Her Majesty's regiments, from whose returns the present statement, up to 1814, has been formed, served in the Northern Circars from 1793 to 1798, it follows, that the services of the European troops during this period were exclusively confined to the Carnatic. During the greater part of 1799, and the whole of 1800, they were actively employed in the field in making the conquest of Mysore, and settling the conquered provinces; but as the service of these two years was so intimately connected with that of preceding years, it could not well be separated. After the conquest of Mysore, their services were extended over a wider field of operations; the Malabar coast and Wynaud were taken possession of in 1799; and in 1800 the districts ceded to the Nizam in 1792, by Tippoo Sultan, were transferred to the East India Company, and now form one of the divisions of the army, under the name of the Ceded Districts. This finishes the first period from 1793 to 1800.

From the year 1801 to 1809 the army was considerably increased; and during the first five years of that period a general war, extending over the Carnatic, the newly-conquered countries, and the Deccan, from the Narbuddah river southwards to Cape Comorin, was carried on with the following powers, viz., the Southern and Western Polligars in the Carnatic below the Ghauts, the Niar and Moplah chiefs in Malabar, Wynaud, and Soonda in the Southern Mahratta country, the refractory chiefs in the newly-ceded districts, and with the Mahratta states in the Deccan, under the command of the Duke of Wellington, then Colonel Wellesley. The battles of Assay and Argaum were fought in September and October 1803, but the campaign did not finish till the winter of 1804-5; and during the whole of this period the troops suffered great privations and hardships from exposure to heavy rains, great vicissitudes of weather during the monsoons, hard and fatiguing marches, &c. In 1805, at the conclusion of the war, the territories under the Madras Presidency extended from the 8th to the 21st degree of north latitude,

and from the 75th to the 85th degree of east longitude, arranged under the following heads or divisions, viz.—

*Original Territory in 1798-9.*—The centre and southern divisions (with the newly-conquered country of Coimbatore), and the Northern Circars.

*Newly-conquered Country, 1800-5.*—The Mysore division, Ceded Districts, Malabar Coast, Wynaud, and Canara.

*Subsidiary Force.*—Hyderabad in the Deccan.

All the country north of the Narbuddah river is called *Hindoostan Proper*; that part between the Narbuddah river and the Khistnah river south is called the *Deccan*; and the territory from the Khistnah river southwards to Cape Comorin includes the newly-conquered country of Mysore, the Ceded Districts, Canara, Wynaud, and the Carnatic below the Ghauts, which, with the Northern Circars, constituted the limits of the Madras Presidency in 1805. The years from 1805 to 1809 were free from war, and complete the second period.

In 1810 and 1811 part of the army was again employed on service in the conquest of the Isles of France and Bourbon and the Island of Java. In the expedition of Java the troops were about four months at sea before they landed on the island. The years from 1812 to 1814 were a period of peace. In 1815 a large field force was formed on the Tamboodra river, in the Ceded Districts; and from that time the troops were constantly on the move until 1817, when they were again called into action against the Mahratta states, namely, Poonah, Nagpore, and Kandiesh, in the Deccan; and Malwah, north of the Narbuddah river, in Hindoostan. They continued in the field from 1817 to 1820, which concludes the third period from 1810 to 1820.\*

The result of this war gave the following accession of territory, viz., Malwah in Central India, Poonah, Nagpore, Kandiesh, the Conkan, and the districts on the Narbuddah, the whole of which, with the exception of Nagpore, is under the Bengal and Bombay Presidencies.

The years 1821-2 were years of peace. From 1824 to 1826 the troops were employed in the Burmese war, and suffered severely from privation and fatigue with consequent sickness. From that time the Tenasserim coast has been occupied by Madras troops; and Penang, Malacca, and Singapore, which were formerly garrisoned by troops from Bengal, have become stations for Madras troops.

In addition, therefore, to the stations already mentioned, as belonging to the Madras Presidency in 1805, must be added the following, namely, Nagpore subsidiary force, Southern Mahratta country, Moulmein, Penang, Malacca, and Singapore. The three latter places are stations for native troops, there being only a small detachment of European artillery at Penang. From 1826 to 1830 were years of peace, with which the fourth period, from 1821 to 1830, closes.

From 1831 to 1833 were years of peace. In 1834 a field force was formed in Mysore, against the Coorg Rajah, and his country was added to the Madras territories; but this campaign was of short duration, and unattended by any disastrous results, either of wounds or sickness.

\* The year 1821, being the last of the series in which the returns were defective has been since placed in this period.



From 1835 to 1837 a large native force was employed in the Northern Circars, in the Kimmidy, Palnaud, and Gumsoor Zemindaries; during which time there was a great deal of sickness and mortality among the native troops, which will form the subject of another report. This concludes the fifth period from 1831 to 1838.

*Statement of the Mean Strength of the European Troops serving in the Madras Presidency in each Year from 1793 to 1838, with the Number of Mean Sick and Deaths in the same Force, and the Ratio to the Strength in each Year from 1793 to 1821, and the Number of Admissions into Hospital, and of Deaths, with the Ratio thereof to the Mean Strength in each Year from 1822 to 1838.*

Years.	Mean Strength.	Mean Sick.	Deaths.	Ratio per 1000 of Mean Strength.	
				Constantly Sick.	Died.
1793	4,929	560	302	113	61
1794	4,686	377	220	80	46
1795	4,567	391	188	85	41
1796	5,025	446	236	88	47
1797	6,583	516	328	78	50
1798	5,385	499	275	92	51
1799	7,043	1,015	1,010	144	143
1800	6,891	723	538	104	78
	45,109	4,527	3,097	100	68
1801	8,110	854	779	105	96
1802	7,281	642	368	88	50
1803	10,624	1,092	1,265	102	119
1804	8,084	957	782	118	96
1805	7,679	946	497	123	64
1806	7,637	780	613	102	80
1807	9,318	943	725	101	77
1808	9,538	1,143	670	119	70
1809	10,779	1,163	637	108	59
	79,050	8,520	6,336	107	80
1810	12,398	1,038	703	83	56
1811	14,259	1,579	1,141	110	80
1812	11,509	1,419	890	123	77
1813	11,202	1,146	709	102	63
1814	10,716	1,141	559	106	52
1815	13,711	<div style="display: flex; align-items: center; justify-content: center;"> <div style="font-size: 3em; margin-right: 5px;">{</div> <div style="text-align: center;"> not stated in returns. </div> </div>	690	..	51
1816	13,530		612	..	45
1817	13,618		753	..	56
1818	13,463		1,306	..	97
1819	13,675		934	..	68
1820	11,050		628	..	56
1821	10,742		614	..	57
	149,873	..	9,539	..	63

*Statement of the Mean Strength of the European Troops serving in the Madras Presidency, &c.—(continued).*

Years.	Strength.	Admissions.	Deaths.	Ratio per 1000 of Mean Strength.	
				Admitted.	Died.
1822	10,813	31,073	683	2,873	63
1823	11,061	29,748	543	2,689	49
1824	10,802	38,625	1,450	3,575	134
1825	9,616	34,268	1,150	3,563	120
1826	10,015	40,224	1,046	4,016	104
1827	11,712	24,070	836	2,055	71
1828	12,171	22,504	651	1,849	53
1829	11,748	19,964	413	1,699	35
1830	11,650	18,175	374	1,560	32
	99,588	258,651	7,146	2,597	71
1831	10,775	18,287	489	1,697	45
1832	10,627	17,605	591	1,656	55
1833	9,575	20,472	687	2,138	71
1834	9,821	22,840	599	2,325	61
1835	9,531	18,537	312	1,947	32
1836	10,250	17,662	349	1,723	34
1837	10,068	17,735	551	1,761	54
1838	9,997	17,535	369	1,754	37
	80,644	150,673	3,947	1,868	49
Total period from 1793 to 1838 .			30,065		
Average .	9,875	..	654	..	66

The principal results to be drawn from this Table are that the mean strength of Europeans from 1793 to 1800 averaged 5,600 men, having increased from 4,900 to 6,800. In 1801 the force was increased to 8,100, and the average of the next period, from 1801 to 1809, was 8,700. In 1810 the force amounted to 12,400, and in the 12 years ending with 1821 it averaged nearly 12,500. During the next period of 9 years, from 1822 to 1830, it averaged only 11,000, and, during the subsequent 8 years, terminating with 1838, it had further decreased to 10,000. The average of the whole period was 9,800 men.

The total number of deaths, during the whole period, was 30,065, and the annual average, 654. The greatest number of deaths in any one year was 1,450, in 1,824, during the Burmese war, when the mean strength was 10,800; but the greatest mortality in proportion to the strength was in 1799, during the conquest of Mysore, and the siege of Seringapatam, when 1,010 men, out of 7,043, or 143 per 1,000, died. In 1824 the proportion was only 134 per 1000.

The average proportion of men constantly in hospital during 21 years, from 1793 to 1814, when a blank occurs in the returns,\* was

\* The returns for this period, published by Mr. Annesley in 1825, were copied from regimental returns which were made out yearly, but did not include the number of admissions into hospital. The returns of the Medical Board, which

105 per 1000, or  $10\frac{1}{2}$  in 100. The number of deaths during the same period was 73 per 1000. The extreme cases occurred in 1799, during the conquest of Mysore, when the proportion of mean sick rose to 144 per 1000, and the deaths to 143 per 1000; and, on the other hand, in 1797, when the admissions were as low as 78 per 1000, and in 1795, when the deaths were only 41 per 1000. From the year 1822 the account exhibits the number of admissions into hospital during the year, instead of the number remaining in hospital at the end of the month; and the results are that, during 17 years, the average annual proportion of admissions to the mean strength was 2,271 per 1000; so that each man, on an average, was admitted  $2\frac{1}{4}$  times into the hospital during a year; and the proportion of deaths to the mean strength was 61 per 1000. The extreme cases during this latter period were 4,016 admissions per 1000, in 1826, and only 1,560 in 1830; and, with regard to mortality, 134 deaths per 1000 in 1824, and only 32 per 1000 in 1830. If the five years from 1822 to 1826, which embrace the Burmese war, be excluded, the proportion of admissions to the mean strength will be reduced to 1,838, and that of deaths to 48, per 1000. The following comparison, with similar returns for troops in the United Kingdom, taken from the official reports, will shew the extent of the difference between the two countries:—

	European Troops in Madras Presidency. 12 Years.	Dragoons and Dragoon Guards in United Kingdom. 7½ Years.
Proportion of Admissions to the Mean Strength	1,838 per 1000	929 per 1000
„ Deaths to Ditto . . . . .	48 „	14 „
„ Deaths to Admissions . . . . .	1 in 38	1 in 66

The admissions are twice as numerous, and the deaths are  $3\frac{1}{2}$  times as numerous, in the Madras Presidency. The proportion of deaths to admissions is not in the same ratio, which is a fact worthy of attention; but it is greatly in excess. It is, however, satisfactory to be able to state that there has been a considerable improvement during the last 10 years in the Presidency, and that, upon the average of the last 3 years, the admissions have not exceeded 1,746 per 1000, and the mortality has been only 41 per 1000.

This diminution of sickness and mortality in the European army, during the last few years, is a point deserving of particular attention, as various causes may be assigned for the improvement. Among these may be enumerated, a better knowledge of the nature and treatment of intertropical diseases; the greater attention which has, of late years, been paid to the regulation, care, and comforts of the sick in hospital; and the great improvement made in the comfort of the soldiers on their first arrival in India. These are points upon which your Committee may enter more fully upon another occasion. At present they will confine themselves to the remark, that there is reason to believe that the health of troops in India depends in a considerable degree upon the interior economy of regiments, as regards their clothing, sleeping, diet, and exercise.

With regard to the proportion of deaths between seasons of peace and war in India, there are grounds for believing that deaths from shewed the diseases, did not exhibit the years separately, but included the whole period of seven years in one statement. No other information, however, could be obtained at that time.

wounds are by no means so numerous as might be expected, and that the greater proportion of deaths during warfare chiefly arises from disease caused by vicissitudes of climate and other evils, to which the troops are necessarily exposed upon active service.

During a period of 46 years it appears, from the above statements, that the general loss by death in the European army under the Madras Presidency, in war and in peace, amounted to 30,065 men, out of an annual average strength of 9,800 men, never under 7,000 after the year 1800, and only once exceeding 14,000.

During the above period there was war for 21, and peace for 25 years. In 21 years of war 15,271 men died, out of an average force of 8,800; and in 25 years of peace 14,794 died, out of an average force of 11,500. The average annual number of deaths in the first period was 727, which, compared with the mean force, yields a result of 82 deaths per 1000: in the latter period the deaths average 592 annually, and the proportion to the mean force was 55 per 1000. The excess, therefore, during the period of war was exactly three-fifths.

When the service upon which the troops were employed was confined to the Carnatic, from 1793 to 1798, a period of 6 years, the deaths amounted to 1,549, out of an average effective strength of 5,196 men, or an average of 258 deaths per annum, and a proportion of 49 per 1000 of the mean strength.

In the succeeding two years, 1799 and 1800, during the siege of Seringapatam and the conquest of Mysore, when the troops were spread over a more extended field of operations, and experienced greater vicissitudes of climate, the deaths amounted to 1,548, out of an average force of 6,967, the number being equal to the whole sum of the preceding 6 years in the Carnatic. The annual average mortality in these two years was 774, or 111 per 1000 of the mean force.

From 1801 to 1805, a period of 5 years, during which time the troops were engaged in active warfare in the Carnatic, the Malabar Coast, Wynaud, Soonda, Mysore, the Ceded Districts, and the Deccan, the deaths were 3,691, out of an average force of 8,355 men. The annual average mortality was 738, and the ratio per 1000 of the mean strength was 88.

From 1806 to 1809, a period of 4 years of peace, the deaths were 2,645, out of an average force of 9,318 men: the average was 661 deaths per annum, and the ratio to the mean force 70 per 1000.

The troops were employed during 1810 and 1811 in the conquest of the French and Dutch islands; and the deaths on this service were 1,844, out of an average force of 13,328 men. The average annual mortality was 922, and the ratio per 1000 of the mean force was 69.

Between 1812 and 1816 there was no actual war, but the troops, particularly those serving in the Deccan, were very much harassed by fatiguing marches in pursuit of Pindaries; and the deaths, during this period of 5 years, amounted to 3,460, out of an average force of 12,133 men, or an annual average of 692 deaths, and a ratio to the mean strength of 57 per 1000.

The Mahratta, or what was called the Pindarie, war, succeeded this period, and continued from 1817 to 1819. The deaths during these 3 years amounted to 2,993, out of an average force of 13,585 men, or an average of 997 deaths per annum, and a ratio of 73 per 1000 of the mean strength.

From 1820 to 1823 inclusive, 4 years of peace, the deaths were

2,468, out of an average force of 10,916 men. The average mortality was 617 per annum, and the ratio per 1000 to the force was 56.

From 1824 to 1826 inclusive the troops were employed in the Burmese war; and the deaths, during these 3 years, amounted to 3,646, out of an average force of 10,144 men. The average of deaths was 1,215 per annum, and the ratio per 1000 of the mean strength was 119.

From the year 1827 to 1838 inclusive, a period of 12 years, there was no war in which European troops were employed, except in 1834, when a small portion were on active service in the Coorg country; but, although they suffered severely, the general results were not materially affected, and therefore the whole of that period may be considered as peace, and the deaths during the 12 years amounted to 6,221, out of an average force of 10,660 men. The average mortality was 518 per annum, and the ratio per 1000 of the mean strength was 48.

From these comparative statements it results that the average mortality, during war, has varied from 49 to 119 per 1000 of the force, and, during peace, from 48 to 70 per 1000; the average of the first period being 82, and of the latter 55 per 1000. If single years be compared, the mortality during war varied from 41 to 143 per 1000, and during peace from 32 to 80 per 1000. It also appears that while the services of the European troops were confined to the Carnatic, during the years from 1793 to 1798, they were, under all circumstances of war and peace, more healthy than they have been since the frontier has been extended, except during the last 12 years, when an almost unbroken peace has prevailed, and the average has been somewhat less than during the period in question.

The following Table will exhibit the above facts at one view :—

Years.	Service.	No. of Years.	No. of Deaths.	Average Annual Mean Strength.	Annual Average No. of Deaths.	Ratio per 1000 of Deaths to Mean Strength.
<b>WAR.</b>						
1793 to 1798	Carnatic . . . . .	6	1,549	5,696	258	49
1799 and 1800	Mysore and conquered countries. . . . .	2	1,548	6,967	774	111
1801 to 1805	General war in the Carnatic, conquered countries, and the Deccan . . . . .	5	3,691	8,355	738	88
1810 and 1811	French & Dutch Islands	2	1,844	13,328	922	69
1817 to 1819	Pindarie War in the Deccan, and Malwa, in Hindostan . . . . .	3	2,993	13,585	997	73
1824 ,, 1826	Burmah . . . . .	3	3,646	10,144	1,215	119
	<b>Total . . .</b>	<b>21</b>	<b>15,271</b>	<b>8,796</b>	<b>727</b>	<b>82</b>
<b>PEACE.</b>						
1806 to 1809	Peace . . . . .	4	2,645	9,318	661	70
1812 ,, 1816	Marching . . . . .	5	3,460	12,133	692	57
1820 ,, 1823	Peace . . . . .	4	2,468	10,916	617	56
1827 ,, 1838	Ditto . . . . .	12	6,221	10,660	518	48
	<b>Total . . .</b>	<b>25</b>	<b>14,794</b>	<b>10,781</b>	<b>592</b>	<b>55</b>

## 2. Native Troops.

The returns for the native troops are complete for a period of more limited duration, but of sufficient extent, and presenting a variety of service, quite sufficient to afford the means of a perfect comparison with the European force. They commence with the year 1822 and close with 1838, a period of 17 years. Of these the two first were years of peace. During the next three, from 1824 to 1826, the Burmese war prevailed. From 1827 to 1833 may be considered a period of peace. In 1834 part of the native force was employed in quelling the disturbances in the country of the Coorg Rajah; and from 1835 to 1837 a large force was employed in the Kimmidy, Palnaud, and Gumsoor Zemindaries. In this, however, as in the Burmese campaign, the increased mortality was caused more by sickness than by wounds.

*Statement of the Mean Strength of the Native Troops serving in the Madras Presidency, and of the Number of Admissions into Hospital and Deaths, with the Ratio thereof to the Mean Strength, in each Year from 1822 to 1838.*

Years.	Mean Strength.	Admissions.	Deaths.	Ratio per 1000 of Mean Strength.	
				Admitted.	Died.
1822	74,707	54,215	956	725	12
1823	71,377	53,243	1,067	746	14
1824	72,267	78,960	1,583	1,092	21
1825	78,735	121,937	2,689	1,549	34
1826	82,564	106,765	2,095	1,293	25
1827	84,128	53,221	1,362	632	16
1828	76,224	40,848	1,129	535	14
1829	71,945	33,982	841	472	11
1830	67,106	30,745	709	458	10
1831	61,623	29,646	811	481	13
1832	60,678	33,451	969	551	16
1833	60,099	35,915	1,354	597	22
1834	58,854	47,504	1,026	807	17
1835	56,777	42,007	723	739	12
1836	56,844	52,302	1,233	920	21
1837	57,274	36,793	1,049	642	18
1838	58,320	37,490	1,212	642	20
	1,149,522	889,044	20,808	773	18

It will be seen that there has been a considerable fluctuation in the number of native troops during the period in the above Table. In 1822 they amounted to 74,700 men. At the close of the Burmese war, in 1827, they had increased to 84,100, since which time they have gradually decreased, and in 1838 did not exceed 58,300. The average of the whole period was 67,600. The average annual proportion of admissions into hospital, during the 17 years, was 773 per 1000; but if the period of the Burmese war be excluded, it was only 615 per 1000, which is exactly one-third of the proportion among the European force during the same years, and one-third less than among the Dragoons and Dragoon Guards in the United Kingdom. It must, however, be kept in view, that in some instances the Sepoys prefer using native remedies secretly to going into hospital, and that the comparative rarity of venereal affections,

owing to most of the Sepoys being married men, tends to affect this comparison very materially. The extreme cases were in 1825, during the Burmese war, when the proportion rose to 1,549 per 1000, which is equal to two-thirds of the average of European troops in the Madras Presidency, and, on the other hand, in 1830, when it fell to 458.

The total mortality during the 17 years was 20,808, or 1,224 per annum, out of an average force of 67,600 men. The average annual mortality was 18 per 1000; but if the period of the Burmese war be excluded, it will be reduced to 16 per 1000, the same as among troops in the United Kingdom.

The greatest mortality was in 1825, when 2,689 men, out of 78,735, died, or 34 per 1000. The least was in 1830, when 709 men, or 10 per 1000, died. The proportion of deaths to admissions was 2·34 per 100, or 1 in 41, which is rather more favourable than among the European force.

A comparison of the mortality, in years of peace and of war, exhibits nearly the same results as those previously observed among the European force. During 10 years of peace the deaths amounted to 10,410, or 1,041 annually, upon a mean strength of 68,620 men, the ratio per 1000 being 15. On the other hand, during 7 years of war, 10,398 deaths, or 1,485 annually, occurred, among a mean strength of 66,473 men, the ratio being 22 per 1000. The difference is rather less than 50 per cent., or an excess of nearly one half during the period of war.

### 3. Diseases.

The next point for consideration is the nature of the diseases which have prevailed among the two classes of troops, and the degree in which they have respectively occasioned sickness and mortality. The returns exhibiting these particulars are complete for the 12 years from 1827 to 1838, and the results for that period are stated in the annexed Table.\*

The original returns distinguish the diseases most prevalent and most fatal in India, ranged in alphabetical order; but for the purpose of comparing the results with those relating to troops in other parts of the world, contained in Major Tulloch's reports, a different classification has been made, resembling, as far as possible, the arrangement adopted in those reports. The comparison is correct for the most important classes of diseases; and the discrepancies, where they exist, are trifling and all on one side, as in no case can the proportion of any class of diseases be less than the return exhibits, although from some of the more uncommon complaints of each class being included with the miscellaneous diseases, the proportion of one or two classes may fall short of the actual amount. Nevertheless, in order to guard against error, a comparative statement of the two systems of classification is here annexed:—

Classes of Diseases.	Specific Diseases in Official Reports.	Specific Diseases in Madras Medical Returns.
Fevers . . . .	Febris, intermittens, remittens, continua communis, and typhus.	Fever, continued, intermittent, and remittent.
Eruptive Fevers .	Variola, Varicella, Vaccina, Scarlatina, Rubeola, &c.	Small-Pox alone was distinguished in the last three years.
Diseases of the Lungs	Pneumonia, Pleuritis, Hæmoptysis, Phthisis Pulmonalis, Catarrhus, Asthma, Dyspnœa.	Pulmonary Diseases, Thoracic Inflammation.

[Continued at p. 128.

*Statement of the Aggregate Strength of European and Native Troops in the Madras Presidency, of the Total Number of Admissions and Deaths among the whole Force, and of the Annual Ratio per 1000 of Mean Strength, distinguishing the principal Diseases, in the 12 years from 1827 to 1838.*

Diseases according to Major Tulloch's Classification.	Diseases, according to Classification in the Madras Medical Returns.	EUROPEANS { Aggregate Strength of 12 yrs. 127,925.				NATIVES { Aggregate Strength of 12 years, 769,872.			
		Admissions.		Deaths.		Admissions.		Deaths.	
		Total Number among whole Force in 12 Years.	Annual Ratio per 1000 of Mean Strength.	Total Number among whole Force in 12 Years.	Annual Ratio per 1000 of Mean Strength.	Total Number among whole Force in 12 Years.	Annual Ratio per 1000 of Mean Strength.	Total Number among whole Force in 12 Years.	Annual Ratio per 1000 of Mean Strength.
Fevers . . . . .	{ Fever, Continued . . . . .	20,018	156·	261	2·04	6,833	8·	304	·39
	{ „ Intermittent . . . . .	16,988	132·	181	1·41	127,552	165·	1,835	2·40
	{ „ Remittent . . . . .	7,652	59·	272	2·12	12,497	16·	570	·74
	Total* . . . . .	44,658	349·	714	5·57	146,882	189·	2,709	3·53
Eruptive Fevers . . . . .		·	·	·	·	·	·	·	·
Diseases of the Lungs . . . . .	{ Pulmonary Diseases . . . . .	549	4·	100	·80	1,862	2·4	280	·36
	{ Thoracic Inflammation . . . . .	4,422	34·	199	1·55	1,251	1·6	275	·35
	Total . . . . .	4,971	38·	299	2·35	3,113	4·	555	·71
Diseases of the Liver . . . . .	{ Hepatic Diseases . . . . .	14,875	116·	720	5·62	729	·9	89	·11
Diseases of the Stomach and Bowels . . . . .	{ Colic . . . . .	3,415	26·	10	·08	3,553	4·6	43	·05
	{ Diarrhœa . . . . .	10,053	78·	199	1·55	12,384	16·	662	·86
	{ Dysentery . . . . .	24,116	188·	1,923	15·03	7,506	9·6	766	1·00
	{ Abdominal Inflammation . . . . .	2,922	22·	120	·93	662	·8	91	·12
	Total . . . . .	40,506	314·	2,252	17·59	24,105	32·	1,562	2·03
Epidemic Cholera . . . . .	{ Cholera . . . . .	3,510	27·	974	7·6	6,896	9·	3,113	4·04
Diseases of the Brain . . . . .	{ Apoplexy . . . . .	307	2·	157	1·33	210	·3	133	·17
	{ Cephalic Inflammation . . . . .	1,048	8·	23	·18	312	·4	11	·01
	{ Insanity . . . . .	413	3·	25	·19	957	1·2	45	·06
	Total . . . . .	1,768	13·	205	1·7	1,479	2·	189	·24
Dropsical . . . . .	{ Dropsies . . . . .	707	5·	138	1·08	2,009	2·6	608	·79
Rheumatic Affections . . . . .	{ Rheumatism . . . . .	13,045	102·	122	·95	40,835	53·	616	·80
Venereal Affections . . . . .	{ Syphilis, &c. . . . .	24,574	192·	74	·57	18,299	23·	122	·16
Abscesses and Ulcers . . . . .	{ Ulcers . . . . .	9,561	74·	28	·22	32,607	42·	287	·37
Wounds and Injuries . . . . .	{ Wounds and Accidents . . . . .	19,088	149·	73	·57	34,603	45·	174	·22
Punished . . . . .		·	·	·	·	·	·	·	·
Diseases of the Eyes . . . . .	{ Diseases of the Eyes . . . . .	9,249	72·	8	·06	8,572	11·	19	·02
Diseases of the Skin . . . . .		·	·	·	·	·	·	·	·
All other Diseases . . . . .	{ Scrofula . . . . .	268	2·	3	·02	791	1·	30	·04
	{ External Inflammation . . . . .	8,879	69·	24	·19	36,132	47·	140	·18
	{ All other Diseases † . . . . .	39,727	316·	587	4·54	116,752	154·	2,205	2·86
	Total ‡ . . . . .	48,874	387·	614	4·75	153,675	202·	2,375	3·08
	Total . . . . .	235,386	1838·	6,221	48·63	473,904	615·	12,418	16·13

\* During the last 8 years 27 per 1000 of Europeans were admitted, and ·08 per 1000 died from ephemeral fever. There were admitted from the same cause, of natives, 65 per 1000, and died, ·28 per 1000.

† During the last 3 years there were admitted for beriberi, of natives, 4 per 1000, and died, ·78 per 1000.

‡ Including fractions.



Classes of Diseases.	Specific Diseases in Official Reports.	Specific Diseases in Madras Medical Returns.
Diseases of the Liver	Hepatitis, Icterus . . .	Hepatic Diseases.
Diseases of the Stomach and Bowels.	Peritonitis, Gastritis, Enteritis, Hæmatemesis, Dysentery, Diarrhœa, Obstipatio, Colica, Dyspepsia, Cholera Morbus.	Colic, Diarrhœa, Dysentery, Abdominal Inflammation.
Epidemic Cholera .	Epidemic Cholera . . .	Cholera.
Diseases of the Brain	Phrenitis, Cephalalgia, Vertigo, Apoplexia, Paralysis, Delirium Tremens, Amentia, Mania, Melancolia, Epilepsia.	Apoplexy, Cephalic Inflammation, Insanity.
Dropsies . . . .	Anasarca, Ascites, Hydrothorax.	Dropsies.
Rheumatic Affections	Rheumatismus, Lumbago, Ischias, Arthritis, Podagra, Odontalgia.	Rheumatism.
Abscesses and Ulcers	Phlegmon et Abscessus, Apostema Lumbare, Ulcers, Fistula.	Ulcers.

The remaining classes are sufficiently defined, and therefore do not require to be specified. No distinction is made in the Madras returns of the men Punished ; and the Diseases of the Skin are shewn, although in the preceding Table they have been added to the Miscellaneous. With this explanation your Committee will proceed to examine the above Table.

With regard, first, to Europeans, the prominent feature is that Fever is the most prevalent disease in the Madras Presidency, but that Dysentery is by far the most fatal. Fever occasioned nearly one-fifth (19 per cent.) of the admissions, but only one-ninth (11·4 per cent.) of the deaths. Dysentery, on the other hand, was the cause of rather more than one-tenth (10·2 per cent.) of the admissions, and of nearly one-third (31· per cent.) of the whole number of deaths. All the Diseases of the Stomach and Bowels which are specified, including Dysentery, occasioned one-sixth (17·1 per cent.) of the admissions, and more than one-third (36·1 per cent.) of the mortality. The next most fatal disease is Cholera, to which nearly one-sixth of the mortality (15·6 per cent.) is attributable. The admissions from this disease were comparatively few, not exceeding  $1\frac{1}{2}$  per cent. of the whole number. Diseases of the Liver are next in order, although they but slightly exceed Fevers in fatality, and fall short of them in frequency by two-thirds. The admissions from this cause amount to one-sixteenth (6·3 per cent.) of the whole number, and the deaths to one-ninth (11·6 per cent.). Diseases of the Lungs are more uncommon and less fatal than in any other station for British troops hitherto examined. The admissions from this cause form only the forty-eighth part (2·1 per cent.) of the whole sickness, and the deaths one-twentieth (4·9 per cent.) of the whole mortality. Diseases of the Brain, although rather uncommon, are generally of a fatal character ; they form a very small proportion of the admissions, but nearly one-thirtieth (3·5 per cent.) of the deaths. The intensity of each class of disease ranks in the following order :—The deaths out of 100 persons attacked with Cholera were 28 (or 1 in  $3\frac{1}{2}$ ) ; with Diseases of the Brain, 11 (or 1 in 9) ; with Dysentery, 8 (or 1 in

12); with Diseases of the Lungs, 6 (or 1 in 16); with Diseases of the Liver, 5 (or 1 in 20); with all kinds of Diseases of the Stomach and Bowels, including Dysentery,  $5\frac{1}{2}$  (or 1 in 18); and with Fevers,  $1\frac{3}{4}$  (or 1 in 62). The average intensity of all kinds of diseases was 2·6 per cent., or 1 in 38.

With regard to the natives, the proportion both of admissions and deaths to the mean strength, during the 12 years from 1827 to 1838, is exactly one-third of the proportion which prevailed among Europeans. The influence, however, of the several diseases is very different. Among the natives Fevers are both the most frequent and most fatal class of disease, with the exception of Cholera, which surpasses them slightly in mortality. The former occasions nearly one-third (30·7 per cent.) of the whole number of admissions, and more than one-fifth (21·9 per cent.) of the whole number of deaths. Cholera occasions exactly one-fourth of the deaths, but only 1·4 per cent. of the admissions, which is nearly the same proportion as among Europeans. The intensity of this disease, however, is much greater among the natives. The proportion of deaths to admissions among them was 45 per cent. (or 1 in 2·2); among Europeans it was only 28 per cent. (or 1 in 3·6.) Dysentery, and Diseases of the Stomach and Bowels, which caused so much mortality among the European force, are comparatively uncommon, and occasion a much smaller proportion of deaths among the natives. They are, however, considerably more intense in their character. Of the admissions they only form the twentieth part (5·2 per cent.), but of the deaths one-eighth (12·5 per cent.). The proportion of deaths to admissions was 6·4 per cent. (or 1 in 15). There is this further difference in this class of diseases between the Europeans and natives. Among the former dysentery is the chief disease, as regards both admissions and deaths; but, among the latter, diarrhœa, compared with dysentery, is nearly double in frequency and nearly equal in fatality. Diseases of the Liver are very uncommon among the natives, constituting an almost inappreciable proportion either of the sickness or mortality, viz., 0·14 per cent. of the former, and 0·7 per cent. of the latter. They are, however, more than double in intensity among the natives, as 12 per cent. (or 1 in 8) of those attacked died. Diseases of the Lungs occasion less than 1 per cent. (·6) of the admissions, and 4·4 per cent. of the deaths. Diseases of the Brain, compared with the latter, are one-half less frequent (0·3 per cent.) and one-third less fatal (1·5 per cent.) In the former class the intensity is three times as great as among Europeans (18 per cent., or 1 in  $5\frac{1}{2}$ ); in the latter it only slightly exceeds it (12 per cent., or 1 in 8). Rheumatism is a very frequent complaint, occasioning nearly one-twelfth (8·6 per cent.) of the admissions, and one-twentieth (4·9 per cent.) of the deaths. Dropsies cause the same proportion of mortality, but less than  $\frac{1}{2}$  per cent. (·4) of the admissions. In intensity they are very fatal, as nearly 1 in 3 of the whole number attacked died, whereas, among the Europeans, the proportion was 1 in 5. It is remarkable that the average intensity of all kinds of diseases is exactly the same as among Europeans, viz., 2·6 per cent., or 1 in 38.

For the purpose of facilitating comparison, your Committee will state these results in a tabular form :—

*Relative Per-centage Proportion of Admissions and Deaths from different Diseases, and Proportion of Deaths to Admissions.*

Classes of Disease.	Europeans.			Natives.		
	Per-centage Proportion of each Class of Disease to the whole Number.		Proportion of Deaths to Admissions.	Per-centage Proportion of each Class of Disease to the whole Number.		Proportion of Deaths to Admissions.
	Admissions.	Deaths.		Admissions.	Deaths.	
Fevers . . . . .	19·	11·4	1 in 62	30·7	21·9	1 in 54
Diseases of the Lungs .	2·1	5·	,, 16	·6	4·4	,, 5·6
"    "    Liver .	6·3	11·6	,, 20	·14	·7	,, 8
"    "    Stomach & Bowels }	17·1	36·1	,, 18	5·2	12·5	,, 15
Cholera . . . . .	1·5	15·6	,, 3·6	1·4	25·	,, 2·2
Diseases of the Brain .	·7	3·5	,, 8·6	·3	1·5	,, 8
Dropsies . . . . .	·3	2·2	,, 5	·4	4·9	,, 3·3
Rheumatism . . . . .	5·5	1·9	,, 107	8·6	4·9	,, 66
All other Diseases . .	47·5	12·7	,, 140	52·7	24·2	,, 83
Total . . . . .	100·	100·	1 in 38	100·	100·	1 in 38

This Table shews the relative frequency of sickness and mortality from different diseases, in the same manner that the last Table shewed the actual influence of different diseases upon the whole force.

It remains to examine somewhat more in detail the principal classes of diseases, and to illustrate the results by some comparisons with troops in other parts of the world, for which purpose your Committee have prepared an abstract of the reports upon all the stations hitherto examined in the official reports, which will be found in a tabular form near the close of the present report.—(See p. 141.)

*Fevers.*—With regard first to fevers, it will be seen from the sub-joined statement extracted from the Table at p. 127, that the most frequent type among European troops is the continued fever; but that it is not so fatal in its character, and does not occasion so many deaths as the “remittent,” although the latter is only one-third as frequent. Among the native troops, however, “intermittent” fever is both the most frequent type, and causes the greatest number of deaths, although it is not as fatal to those attacked as the other types.

Types.	Europeans.			Natives.		
	Annual Ratio per 1000 of Mean Strength.		Proportion of Deaths to Admissions.	Annual Ratio per 1000 of Mean Strength.		Proportion of Deaths to Admissions.
	Admissions.	Deaths.		Admissions.	Deaths.	
Fever, continued .	156	2·04	1 in 76	8	·39	1 in 22
"    intermittent	132	1·41	,, 93	165	2·40	,, 69
"    remittent .	59	2·12	,, 28	16	·74	,, 22
Total . . . . .	349	5·57	1 in 62	189	3·53	1 in 54

It does not appear that fevers of an epidemic nature, or of a malignant character, prevailed to any extent among either the European or native troops during the 12 years under review, although during seasons when the troops were in active service, or were still suffering from its effects, as in 1827, after the Burmese war; in 1834, when a portion of the European force was employed against the Coorg Rajah; and in the 4 years from 1834 to 1837, when a large native force was employed in the field, both the sickness and mortality were more than doubled. This will be seen in the following Table of the number of admissions and deaths from all kinds of fever in each year:—

Years.	Europeans.			Natives.		
	Mean Strength.	Ad-missions.	Deaths.	Mean Strength.	Ad-missions.	Deaths.
1827	11,712	5,374	131	84,128	15,722	276
1828	12,171	4,353	86	76,224	12,706	191
1829	11,748	3,482	49	71,945	8,726	164
1830	11,650	3,217	34	67,106	6,976	112
1831	10,775	3,169	39	61,623	5,624	112
1832	10,627	3,026	41	60,678	7,426	141
1833	9,575	3,357	52	60,099	8,768	182
1834	9,821	6,451	114	58,854	20,668	334
1835	9,531	3,704	45	56,777	15,949	266
1836	10,250	2,604	32	56,844	24,346	557
1837	10,068	2,948	46	57,274	10,467	208
1838	9,997	2,973	45	58,320	9,504	166
Total .	127,925	44,658	714	769,872	146,882	2,709
Average	10,660	3,721	59	64,156	12,240	225

The chief increase among both classes of troops, in those years in which an excess prevailed, was occasioned by intermittent fevers.

During the last 8 years of the period, a species of ephemeral fever has been distinguished in the returns, but which, from the distinction not extending over the whole period, and from the character of the disease, which is so fugitive as to last only for a few hours, has been classed with the miscellaneous diseases. It appears, however, to have been rather prevalent among the natives. During the 8 years in which it is noticed, 30,795 natives were admitted into hospital, and 132 died from it. These numbers respectively bear a proportion to the mean strength of 65· and ·28 per 1000. Among the European force it was more uncommon and less fatal. The number attacked with it was 2,213, and the deaths from it were 7, which bear respectively to the mean strength a proportion of 27· and ·08 per 1000.

Eruptive fevers are not distinguished in the Madras returns; but, during the two years 1837 and 1838, in which small-pox was noticed, there were only seven cases, causing two deaths, among the European force, which then averaged 10,000 men. Among the native force during the same two years, averaging 57,700 men, there were 316 cases of small-pox, causing 14 deaths.

Comparing the Madras Presidency with other countries in which

British troops are stationed, it appears that Fevers are far more prevalent at the former than at any other station in which they do not assume an epidemic form. These exceptions are, Sierra Leone, Jamaica, the Windward and Leeward Islands, the Bermudas, Ionian Islands, and Gibraltar. The following abstract will shew the several stations in the order in which fevers cause mortality in each, among the European troops :—

	Annual Ratio per 1000 of Mean Strength among European Troops.	
	Admissions.	Deaths.
Sierra Leone . . . . .	1,411	410·2
Jamaica . . . . .	910	101·9
Windward and Leeward Islands . . . . .	717	36·9
Ionian Islands . . . . .	457	13·
Bermudas . . . . .	136	11·
Gibraltar . . . . .	161	9·3
Madras Presidency . . . . .	349	5·5
Malta . . . . .	173	2·9
Canada . . . . .	214	2·4
St. Helena. . . . .	71	2·2
Cape of Good Hope (Cape District) . . . . .	88	1·9
Mauritius . . . . .	154	1·7
Nova Scotia and New Brunswick . . . . .	69	1·6
United Kingdom (Dragoons and Dragoon Guards). . . . .	75	1·4
Cape of Good Hope (Eastern Frontier) . . . . .	81	1·2

The average number of admissions from all diseases is twice as great, and that of the deaths  $3\frac{1}{2}$  times as great, in the Madras Presidency as in the United Kingdom. The admissions from fevers are  $4\frac{1}{2}$  times as numerous, and the deaths four times as numerous, in the former as in the latter country. The proportion of deaths to admissions is 1 in 53 in the United Kingdom, and 1 in 63 in the Madras Presidency, from which it results that the form of the disease is generally milder in the latter country.

Although the sickness and mortality occasioned by fever among the native troops in the Madras Presidency is much less than the amount which prevails among the European troops, yet, compared either with European or native troops at other stations, the Madras native army ranks in this respect in the same place, as is shewn in the following abstract :—

	Annual Ratio per 1000 of Mean Strength among Native Troops.	
	Admissions.	Deaths.
Jamaica, Negroes . . . . .	47	8·2
Windward and Leeward Islands, Negroes . . . . .	168	4·6
Madras Presidency, Sepoys . . . . .	189	3·5
Sierra Leone, Negroes . . . . .	54	2·4
Cape of Good Hope (Eastern Frontier), Hottentots . . . . .	66	·7
Mauritius, Negroes . . . . .	87	Nil.

*Diseases of the Lungs.*—The Madras returns distinguish only two classes of these diseases, but they embrace all those which are included under the general head in the official reports. These are Pulmonary Diseases, and Thoracic Inflammation. The latter is infinitely more prevalent, and causes a greater mortality, among the European force than the former; while, among the native army, the former is one-third more frequent, and occasions about the same number of deaths.

	Pulmonary Diseases.		Thoracic Inflammation.	
	Europeans.	Natives.	Europeans.	Natives.
Annual Ratio per 1000 { Admissions of Mean Strength . . { Deaths .	4. 80	2.4 36	34. 1.55	1.6 .35
Proportion of Deaths to Admissions. .	1 in 5½	1 in 7	1 in 22	1 in 4½

Compared with other stations of the British army, the Madras Presidency is peculiarly exempt from this class of diseases. The mortality from this cause is three-fifths less than the mortality from the same diseases in the Mauritius, and five-sevenths less than in the United Kingdom. The several countries rank in the following order:—

	Annual Ratio per 1000 of Mean Strength among European Troops.	
	Admissions.	Deaths.
Windward and Leeward Islands . . . . .	115	10.4
Bermudas . . . . .	126	8.7
United Kingdom . . . . .	148	7.7
Jamaica . . . . .	85	7.5
Nova Scotia and New Brunswick . . . . .	125	7.1
Canada . . . . .	148	6.7
Malta. . . . .	120	6.
Mauritius . . . . .	84	5.6
Gibraltar. . . . .	141	5.3
Sierra Leone . . . . .	56	4.9
Ionian Islands . . . . .	90	4.8
Cape of Good Hope (Cape District) . . . . .	98	3.9
St. Helena . . . . .	61	3.4
Cape of Good Hope (Eastern Frontier) . . . . .	82	2.4
Madras Presidency . . . . .	38	2.3

If this comparison had excluded cases of Thoracic Inflammation, and referred to Pulmonary Diseases alone, the exception in favour of India, as regards both Europeans and natives, would have been much more striking.

It is a remarkable fact, that in all the stations in which native troops are quartered with Europeans, with the single exception of the Madras Presidency, the natives suffer a greater mortality from diseases of the lungs than the Europeans. Thus the annual loss per 1000 in the several stations was, respectively, among Europeans and natives,—

	Europeans.	Natives.
Windward and Leeward Islands . . . . .	10.4	16.5
Jamaica . . . . .	7.5	10.3
Mauritius . . . . .	5.6	12.9
Sierra Leone . . . . .	4.9	6.3
Cape of Good Hope (Eastern Frontier) . . . . .	2.4	3.9
Madras Presidency . . . . .	2.3	.7

It will be a point of much interest to determine whether this remarkable difference arises from a peculiar predisposition among the races of African origin to this class of diseases, from the use of animal food, or from the climate of the Peninsula of India being unusually favourable to persons having a tendency to pulmonary complaints.

In the next volume of the Statistical Reports, now in course of pre-

paration for Parliament, your Committee understand that this subject will be more fully discussed, and that the remarkable influence of the climate of the East Indies in averting Pulmonary Diseases, both among natives and Europeans, will be established beyond a doubt.

The admissions per 1000 among the natives in each country was, in the Windward and Leeward Islands, 99; in Jamaica, 59; in the Mauritius, 139; in Sierra Leone, 51; at the Cape of Good Hope, 107; and in the Madras Presidency, 4.

*Diseases of the Liver.*—This class of diseases admits but of few subdivisions, and none is made in the Madras returns. It prevails to a considerable extent, and causes a large mortality among the European troops; but among the native soldiers it is very uncommon. It cuts off more than a ninth of the Europeans, and less than 1 per cent. of the natives. The latter, however, are less able to resist it than the former, as 12 per cent., or 1 in 8, of those attacked, died, among the natives, and only 5 per cent., or 1 in 20, among the Europeans. The climate of the East Indies is generally supposed to be peculiarly favourable to the development of these diseases; but it appears from a comparison of the British colonies that, although the number of persons attacked with liver complaints was much greater in Madras than elsewhere, yet the mortality from this cause was even greater among the European troops at Sierra Leone, and among the native troops in the Mauritius. The European troops also in the latter island, and those in St. Helena, suffered two-thirds of the mortality which prevailed in Madras. The following is the order in which the countries rank:—

	Annual Ratio per 1000 of Mean Strength among European Troops.	
	Admissions.	Deaths.
Sierra Leone. . . . .	82	6
Madras Presidency . . . . .	116	5.6
Mauritius . . . . .	82	4
St. Helena . . . . .	29	4
Windward and Leeward Islands . . . . .	22	1
Cape of Good Hope (Cape District) . . . . .	22	1.1
Malta. . . . .	21	1.1
Cape of Good Hope (Eastern Frontier) . . . . .	21	1
Jamaica . . . . .	10	1
Ionian Islands . . . . .	17	.8
Bermudas . . . . .	14	.5
Gibraltar . . . . .	13	.4
United Kingdom . . . . .	8	.4
Nova Scotia and New Brunswick . . . . .	9	.2
Canada . . . . .	8	.2

The natives, on the other hand, are less subject to this class of diseases in the Madras Presidency than in any other station. In all, however, except the Mauritius, both the sickness and mortality from this cause is slight.

	Annual Ratio per 1000 of Mean Strength among Native Troops.	
	Admissions.	Deaths.
Mauritius . . . . .	25	5.7
Western Coast of Africa . . . . .	4	1.1
Windward and Leeward Islands . . . . .	7	.9
Cape of Good Hope (Eastern Frontier) . . . . .	4	.5
Jamaica . . . . .	2	.4
Madras Presidency . . . . .	1	.1

*Diseases of the Stomach and Bowels.*—This class of diseases, next to fevers, forms the most frequent cause of sickness, and occasions a far greater amount of mortality, among Europeans in the Madras Presidency, than any other class of diseases. It is probable that a few of the minor and less common complaints, which are included under this head in the official reports, are not separated from the miscellaneous diseases in the Madras returns; but the four principal diseases are distinguished, and the annual ratio of sickness and mortality, caused by each among Europeans, is shewn in the following statement:—

	Annual Ratio per 1000 of Mean Strength.	
	Admissions.	Deaths.
Colic . . . . .	26	•08
Diarrhœa . . . . .	78	1•55
Dysentery . . . . .	188	15•03
Abdominal Inflammation. . . . .	22	•93
Total . . . . .	314	17•59

The proportion of deaths to admissions by each disease was—

Colic . . . . .	1 in 341
Diarrhœa . . . . .	„ 50
Dysentery . . . . .	„ 12
Abdominal Inflammation . . . . .	„ 24

These four diseases occasion one-sixth of the whole amount of sickness, and three-eighths of the whole amount of mortality. But dysentery is the chief cause of both, and must be considered as the most fatal disease among Europeans in this part of India. One-tenth of the admissions, and nearly one-third of the deaths, were caused by this disease alone. It is, in fact, the disease in which many less serious complaints terminate. Repeated relapses of slight bowel complaints at length occasion this aggravated form of disease. Fever and liver complaints, also, are frequently followed by dysentery.

Among the native troops diarrhœa is the most frequent form of this class of diseases, although dysentery causes a somewhat greater mortality, and is more fatal to those attacked. The annual ratio per 1000, to the mean strength, was—

	Admissions.	Deaths.
Colic . . . . .	4•6	•05
Diarrhœa . . . . .	16•	•86
Dysentery . . . . .	9•6	1•
Abdominal Inflammation . . . . .	•8	•12
Total . . . . .	32•	2•03

The proportion of deaths to admissions, from each disease, was—

Colic . . . . .	1 in 82
Diarrhœa . . . . .	„ 19
Dysentery . . . . .	„ 10
Abdominal Inflammation . . . . .	„ 7

Comparing the European with the native troops, the admissions among the former, from all the diseases of this class, were 10 times more numerous than among the latter, and the deaths were nearly 9 times more numerous. Comparing the Europeans with the same class of troops in other countries, the mortality is greater than in any other,



except in Sierra Leone, and the Windward and Leeward Islands, and is 22 times as great as in the United Kingdom, although the admissions are not more than  $3\frac{1}{2}$  times as numerous. The order in which the several countries stand is as follows:—

Annual Ratio per 1000 of Mean Strength among Europeans.		
	Admissions.	Deaths.
Sierra Leone . . . . .	504	41·3
Windward and Leeward Islands . . . . .	421	20·7
Madras Presidency . . . . .	314	17·6
St. Helena . . . . .	268	13·9
Mauritius . . . . .	275	10·6
Bermudas . . . . .	415	5·3
Jamaica . . . . .	238	5·1
Malta . . . . .	155	3·6
Ionian Islands . . . . .	156	3·5
Cape of Good Hope (Cape District) . . . . .	126	3·1
Ditto (Eastern Frontier) . . . . .	88	2·3
Gibraltar . . . . .	186	2·1
Nova Scotia and New Brunswick . . . . .	94	1·5
Canada . . . . .	155	1·3
United Kingdom . . . . .	94	·8
The same among Natives.		
	Admissions.	Deaths.
Windward and Leeward Islands . . . . .	93	7·4
Sierra Leone . . . . .	131	5·3
Mauritius . . . . .	128	5·
Cape of Good Hope (Eastern Frontier) . . . . .	90	4·8
Jamaica . . . . .	17	3·
Madras Presidency . . . . .	32	2·

Referring to the first part of this Table, which relates to Europeans, dysentery was the principal disease in all the five countries at the top of the list; it appears also to have been the most fatal, though not always the most frequent, complaint among the black troops.

*Cholera.*—The Madras returns do not distinguish between epidemic cholera and the milder disease of cholera morbus; and it is stated, upon the best authority, that almost every sudden invasion of disease which proves fatal is classed under the head of cholera—a fact which would tend to indicate a careless system of observation, similar to that which in this country so much swells the apparent mortality caused by apoplexy and consumption. It is, therefore, probable, that some portion of cases not belonging to this class are included under this head, and tend, in some degree, to invalidate the comparison between this Presidency and other countries. There can, however, be no doubt that this disease, in its most malignant form, is more general, and recurs more often, in the East Indies than in any other country occupied by British troops. It attacks both Europeans and natives in greater numbers, and with greater severity, than in any other country, but not with equal force; for among the natives the admissions amount only to one-third, and the deaths to one-half, of those which prevailed among Europeans.

In several of the countries occupied by British troops the cholera is happily a stranger. Among those in which it has hitherto appeared it has prevailed to the extent exhibited in the following Table; but as it has only been a transient visitor, and its ravages, during the short period of its prevalence, have been calculated as extending over the whole period examined, during the greater part of which the disease was almost or

entirely dormant, the statement does not give a correct view of the intensity of the disease during the time of its prevalence. In Nova Scotia and New Brunswick, for instance, the epidemic only prevailed in 1834, when it cut off nearly 39 per 1000 of the force; but this mortality, extended over a period of 20 years, makes the annual average ratio only 1·4 per 1000. In Canada it prevailed in 1832 and 1834, and the ratio of mortality, during those two years, was 22 per 1000 of the mean force, although, on the average of the whole period, it was only 2·1.

		Annual Ratio per 1000 of Mean Strength.	
		Admissions.	Deaths.
Madras Presidency	(Europeans)	27	7·6
"	(Natives)	9	4·
Gibraltar	(Europeans)	7	2·2
Canada	(Ditto)	6	2·1
Nova Scotia and New Brunswick	(Ditto)	5	1·4
United Kingdom	(Ditto)	4	1·2
Mauritius	(Ditto)	9	1·1

As the epidemic form of cholera is liable to great fluctuations, it will be of interest to know to what extent it prevailed in different years. The following statement, therefore, of admissions and deaths in each year is given. The mean strength has been omitted, as it has already been furnished in the Table relating to fevers, at p. 131 :—

Years.	Europeans.		Natives.	
	Admissions.	Deaths.	Admissions.	Deaths.
1827	270	110	560	283
1828	434	117	819	368
1829	231	30	501	213
1830	290	44	262	126
1831	290	91	639	271
1832	533	225	808	333
1833	954	228	1,228	579
1834	135	13	115	58
1835	61	2	12	2
1836	36	3	63	27
1837	173	72	702	351
1838	103	39	1,187	502
Total	3510	974	6,896	3,113
Annual Average Ratio per 1000 of Mean Strength . . }	27·	7·6	9·	4·04

Thus it appears to have occurred in an epidemic form among the European troops at three several periods during the 12 years, and to have prevailed at the same time among both classes of troops. The greatest mortality which it occasioned among the European troops was 2·24 per 1000 of the mean strength in 1832-3, and the greatest mortality among native troops occurred in the same years, and amounted to 7·5 per 1000. In some years it will be seen that the disease was almost entirely dormant. The following abstract exhibits the ratio of admissions and deaths to the mean strength among both classes of troops, at the three periods of preva-

lence, and in 1835-6, when the troops were almost free from the disease:—

Years.	Europeans.		Natives.	
	Admissions, per 1000.	Deaths, per 1000.	Admissions, per 1000.	Deaths, per 1000.
1827-8	29	9.5	8.	4.
1832-3	73	22.4	16.	7.5
1837-8	13	5.5	16.	7.4
Average .	39	12.3	13.	6.1
1835-6	4	.2	.7	.2

Although the disease is much less prevalent, and causes a less amount of mortality, among the native troops, it is greater in intensity, as among that class 1 in 2.2 of those attacked died, and among Europeans only 1 in 3.6.

The latter, it may be remarked, is almost exactly the same ratio of intensity which has been found to prevail in all the European and American stations in which the disease has of late years made its appearance among the troops, as will be seen in the following extract from the official reports :—

In the United Kingdom, 1832-33-34 . . . . .	1 in 3.2
Gibraltar, 1834 . . . . .	,, 3.5
Nova Scotia, 1834 . . . . .	,, 3.5
Canada, 1832 . . . . .	,, 2.8
Canada, 1834 . . . . .	,, 2.9
Honduras (Black Troops) 1836 . . . . .	,, 3.1

So that neither climate nor treatment appear to have had any effect in modifying the fatality of this disease.

*Diseases of the Brain.*—Of these only three kinds are distinguished in the Madras returns, and as the official reports upon other stations embrace several others, no comparison can be instituted between the Madras Presidency and other countries. It appears, however, that, even with these omissions, this class of diseases is more frequent and more fatal than in any other country, except Sierra Leone, the West India Islands, and the Mauritius. They occasion 7 times more deaths among the European than among the native force, and nearly 7 times more admissions. It is probable that intemperance, which is carried to great excess among the European troops, and which is scarcely ever known among the natives, tends greatly to produce this effect. The natives sometimes use bhang and opium, which cause intoxication; but their use is by no means general. This supposition is strengthened by Major Tulloch's observations upon the effects of delirium tremens, in his report upon the Mauritius. He there shews that, in that island, 16.8 per 1000 of the European troops were admitted into hospitals, and 1.6 per 1000 died, from this disease alone; and, in the Windward and Leeward command, 2 per 1000 died from the same cause. Of the persons attacked in Madras, 1 in 8.6 die among the Europeans, and 1 in 7.8 among the natives. The most frequent form of the disease among Europeans is cephalic inflammation, and among the natives, insanity;

but the most fatal, in both classes, is apoplexy. This will be seen in the following abstract :—

		Annual Ratio per 1000 of Mean Strength.		Proportion of Deaths to Admissions.
		Admissions.	Deaths.	
Europeans	{ Apoplexy . . . . .	2•	1•33	1 in 2
	{ Cephalic Inflammation . . . . .	8•	•18	„ 45
	{ Insanity . . . . .	3•	•19	„ 16
	Total . . . . .	13•	1•7	1 in 8•6
Natives .	{ Apoplexy . . . . .	•3	•17	1 in 1½
	{ Cephalic Inflammation . . . . .	•4	•01	„ 28
	{ Insanity . . . . .	1•2	•06	„ 19
	Total . . . . .	2•	•24	1 in 7•8

*Dropsies.*—This class of diseases is proportionately more frequent and more fatal among the natives, compared with Europeans, than most other diseases ; but the proportion is still much in favour of the former, among whom the admissions only amount to one-half, and the deaths to four-fifths of the ratio prevailing among Europeans. The proportion of deaths among those attacked was also one-half greater among the former class.

	Europeans.	Natives.
Annual Ratio per 1000 of Admissions . . . . .	5•	2•6
Deaths . . . . .	1•08	•79
Proportion of Deaths to Admissions . . . . .	1 in 5	1 in 3½

Comparing the Madras Presidency with other countries, dropsies appear to be more prevalent, both among Europeans and natives, in the former than in any country, except Sierra Leone, Jamaica, and the Windward and Leeward Islands. They are more than three times more numerous among the European troops, and nearly three times more numerous among the native troops, than among the troops in the United Kingdom. These results are exhibited in the following statement :—

		Annual Ratio per 1000 to the Mean Strength.	
		Admissions.	Deaths.
Europeans :—	Sierra Leone . . . . .	21	4•3
	Windward and Leeward Islands . . . . .	7	2•1
	Jamaica . . . . .	5	1•2
	Madras Presidency . . . . .	5	1•
	St. Helena . . . . .	2	•7
	Bermudas . . . . .	7	•6
	Cape of Good Hope (Cape District) . . . . .	2	•6
	Ionian Islands . . . . .	2	•5
	Nova Scotia and New Brunswick . . . . .	2	•5
	Cape of Good Hope (Eastern Frontier) . . . . .	2	•5
	Malta . . . . .	2	•4
	Canada . . . . .	2	•4
	Mauritius . . . . .	2	•3
	Gibraltar . . . . .	1	•3
Natives :—	United Kingdom . . . . .	1	•3
	Jamaica . . . . .	17	3•
	Windward and Leeward Islands . . . . .	5	2•1
	Madras Presidency . . . . .	2	•8
	Sierra Leone . . . . .	5	•3
	Mauritius . . . . .	3	Nil.
	Cape of Good Hope (Eastern Frontier) . . . . .	1	,,

Rheumatism and Ulcers are, compared with other diseases, more frequent among the natives than among Europeans. Rheumatism occasions 5·5 per cent. of the whole sickness among Europeans, and 8·6 per cent. among the natives. Ulcers occasion 4 per cent. of the sickness among the former, and 7 per cent. among the latter. The intensity of both is likewise much greater among the natives. Of Europeans attacked with rheumatism, 1 in 107 die; and of natives, 1 in 66. Of Europeans attacked with ulcers, 1 in 341 died, and of natives, 1 in 113. Ulcers, however, are much less frequent at present among the native troops than they were in former years; and this improvement may be attributed to a better system of clothing the Sepoys, and to the general amelioration which has taken place in their condition. Venereal diseases occasioned  $10\frac{1}{2}$  per cent. of the whole sickness among Europeans, and not quite 4 per cent. among the natives. The proportion of deaths to admissions from this cause was 1 in 332 among the former, and one in 150 among the latter.

These particulars, with reference to each class of disease in different countries, are shewn at one view in the annexed Table (p. 141):—

From the information given in this Table, there will be no difficulty in assigning to the Madras Presidency its proper place among the different dependencies of the British Crown, with respect to the amount of sickness and mortality prevailing among the troops stationed in it. With regard, first, to Europeans, it will be seen that the admissions into hospital are two-fifths less numerous than in Sierra Leone, one-thirtieth less than in the Windward and Leeward Islands, and nearly equal with the number in Jamaica; but that, compared with any other country, they are greatly in excess, viz., one-third more than in the Bermudas; one-half more than in Malta, the Ionian Islands, Mauritius, or Canada; exactly double the United Kingdom, and double, or more than double, any other country.

The proportion of deaths, however, is very different, and a greater reliance may be placed on this comparison, as a difference of practice with regard to admitting men into hospital may prevail in different parts of the British Empire, whereas, with respect to the deaths, no such cause of discrepancy can exist. Compared, therefore, with other countries, the mortality ranks as follows: a tenth of that in Sierra Leone; five-twelfths of that in Jamaica; and five-eighths of that in the Windward and Leeward Islands. On the other hand, it is two-fifths greater than in the Bermudas, or Mauritius; nearly twice as great as in the Ionian Islands, or St. Helena;  $2\frac{1}{2}$  times as great as in Gibraltar; 3 times as great as in Malta, or Canada;  $3\frac{1}{2}$  times as great as in the United Kingdom, Nova Scotia, New Brunswick, or Cape Town; and nearly 5 times as great as in the Eastern Frontier of the Cape of Good Hope.

The natives suffer one-fourth less sickness than those serving in any other country, except Jamaica, where the proportion of admissions is so few that, as is stated in the official reports, all the slight cases of sickness must have been omitted. Their mortality is considerably less than one-half of that experienced in the Windward and Leeward Islands, or the Mauritius; rather more than one-half of that prevailing in Jamaica and Sierra Leone; and one-half greater than on the Eastern Frontier of the Cape of Good Hope, which appears to be, altogether, the most healthy country occupied by British troops. Compared with the troops



serving in the United Kingdom, the natives in the Madras Presidency suffered only one-seventh greater mortality, although they were engaged, during a considerable portion of the period under review in active service, and possessed much fewer comforts and advantages than the troops in Great Britain. The mortality of each country is respectively as follows:—

	Deaths per 1000 of Strength.	
	Europeans.	Natives.
Sierra Leone . . . . .	483·	30·1
Jamaica . . . . .	121·3	30·
Windward and Leeward Islands . . . . .	78·5	40·
Madras Presidency . . . . .	48·6	16·1
Bermudas . . . . .	28·8	··
Mauritius . . . . .	27·4	37·0
St. Helena . . . . .	25·4	··
Ionian Islands . . . . .	25·2	··
Gibraltar . . . . .	21·4	··
Malta . . . . .	16·3	··
Canada . . . . .	16·1	··
Nova Scotia and New Brunswick . . . . .	14·7	··
United Kingdom . . . . .	14·	··
Cape of Good Hope (Cape District) . . . . .	13·7	··
„ (Eastern Frontier) . . . . .	9·8	10·9

These returns relate only to non-commissioned officers and privates; but it is generally supposed that the mortality among officers bears a nearly uniform proportion to that which prevails among the privates, of about one-third less.\* There exist, however, some more certain data with regard to the mortality of officers and civil servants in the Madras Presidency, which have been furnished by Mr. Edmonds, in an article inserted in the *Lancet* (June 23, 1838). The average annual mortality of different grades of European officers during 20 years, from 1809 to 1828, is there stated to be as follows:—

		Deaths per 1000.
Native Infantry—Ensigns . . . . .		36·
„ Lieutenants . . . . .		43·9
„ Captains . . . . .		45·3
„ Majors . . . . .		48·8
Average . . . . .		43·2
Cavalry and Artillery, of above ranks . . . . .		36·1
Staff Officers . . . . .		49·4
Civil Servants under 45 . . . . .		19·4
„ above 45 . . . . .		51·3

If this statement be correct, the mortality of officers, compared with that of the private soldiers, is much higher in the Madras Presidency than in other countries, as it is also stated by the same authority to be higher than that of officers in the Bengal or Bombay Presidencies.

Your Committee propose, in two or more subsequent reports, to extend their enquiries to the Tenasserim coast and the other stations under the Madras Presidency, which are separated from the Indian Peninsula, and to examine the several stations in the Peninsula separately. They also hope to be able to lay before the Society some account of the sickness and mortality experienced by the troops in the Burmese war of

\* On the average of all the stations upon which Major Tulloch has reported, excepting Sierra Leone, the proportion was as 12 to 19 per 1000. In the East Indies it would be higher, as officers have not the same opportunities for retiring and returning home.

1824-26, together with other information of interest which is contained in the papers brought before them by Mr. Annesley.

Before concluding the present report your Committee cannot refrain from expressing a hope that the statements now laid before the public will attract attention to the condition of the British troops and Sepoys in India; that it will stimulate enquiry into the causes of the excessive mortality which prevails among the European portion of that body, and lead to the adoption of remedies, or, at least, to the removal of all unnecessary provocations to disease. They further trust that their labours will elicit similar information from the other presidencies; or if such records are not kept, that speedy measures may be taken to supply the deficiency for the future, so that the authorities who have the power of introducing sanatory measures may be able to judge of the real condition of the service, and to ascertain what steps are necessary and practicable to promote its improvement.

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*Statistics of the Metropolitan Commission in Lunacy.* By Lieut.-Col. SYKES, F.R.S., Vice-President of the Statistical Society of London, &c., Commissioner.

[Read before the Statistical Society of London, 15th June 1840.]

THE establishment of a Board so important to the interests of the public, the cause of humanity, and the security and proper treatment of unhappily afflicted individuals, as the Commission in Lunacy, is owing, not less in its original design than in its consolidation and practical working, to the philanthropic zeal and perseverance of Mr. Robert Gordon, M.P. for Windsor, and at present Joint Secretary to the Treasury.

Mr. Gordon moved for a committee of enquiry into the regulation of Lunatic Asylums in 1826-7, during the short administration of Mr. Canning; and the frightful abuses discovered in the progress of the enquiry led to the establishment of the Metropolitan Commission in Lunacy, by the Acts of the 9th and 10th George IV.

Nevertheless, the state of some of the asylums in London and its neighbourhood, owing to certain defects in the mode of systematic and efficient supervision, called for the further interference of Government, not only to secure to the afflicted proper medical treatment, food, comforts, and regulated freedom from restraint, but also to prevent or remedy the oppressions of parties who might work out selfish objects, through the confinement in a mad-house of the imbecile, the ignorant, the helpless, and the unprotected. It will be understood how much it was the interest of parties, with a view to enhance their profits, to place patients under constant restraint, instead of having a proper number of keepers to look after them; how much it was an object to confine the aliment to the lowest and coarsest means of subsistence, to the exclusion of little luxuries and comforts; and that cleanliness and ventilation could scarcely be looked for in the clothes, bedding, or apartments, where these essentials could only be secured by the constant and daily, nay, hourly, labours of a sufficient number of active attendants. To guard against or to remedy the frightful evils of such contingencies, the modified Commission in Lunacy was established by the Acts of 2nd and 3rd William IV., and 3rd and 4th William IV., for three years, and to the